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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,513	02/06/2004	I. John Khan	CRD5015-US-NP	6547

27777 7590 04/09/2007
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EXAMINER

KHOLDEBARIN, IMAN K

ART UNIT	PAPER NUMBER
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3737

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

ED

Office Action Summary	Application No. 10/773,513	Applicant(s) KHAN ET AL.	
	Examiner I Kenneth Kholdebarin	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>05/18/2004</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because figure 4 of drawing is not listed in the body of the specification under brief description of the drawings. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-5 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin (US 5,307,808).

Re Claim 1, 3-5 and 9: Although Dumoulin '808 fails to specifically suggest use of three or more (limitation of claim 3) magnetic resonance tracking coils in the medical device and a magnetic

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resonance system having a number of receivers equal to or greater than the number of coils,

Dumoulin '808 teaches a tracking system for tracking the position of the coils (limitation of claim 9) contains of a medical device (150) like the catheter or guide wire (limitation of claim 4 and 5) to be inserted in the body of a patient (100) having coil (200) and display (180).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to track the location of a device that contains coil(s) in the environment of magnetic resonance and further display the location of device or coil(s) with respect of the patient's body, in order to improve the method and apparatus of MR imaging and diagnostic images.

Re claim 2: Although Dumoulin '808 fails to specifically suggest at least one magnetic resonance tracking coil coupled with a corresponding receiver of the MR system, Dumoulin '808 teaches a tracking system where the location of the device containing coil is tracked through the receivers of MR system.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a tracking system that each receiver corresponds to an individual coil, in order to have a more precise location of each individual coil within the medical device.

Re Claim 7: Although Dumoulin '808 fails to specifically suggest to display the positions of the adjacent coils on the screen with a connecting line Dumoulin '808 teaches the tracking system with display (180) that shows the position of the medical device containing coil(s). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to display the adjacent coils with a line to show all the responds received from each coil and the

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position of each coil with respect to the other adjacent coil, in order to track the movement of the medical device inserted in the body of the patient.

Re claim 8: Although Dumoulin '808 fails to specifically suggest scanning only the position of the coil than scanning to obtain an image will operate the system at a lower acoustic noise level it would have been obvious to one of ordinary skill in the art at the time the invention was made only finding the coordination of coil(s) base on signals emitted from the coil(s) in Magnetic field, does not required for the Imaging device to operate continuously to obtain an image in order to identify the location of the coils or the medical device inserted in the body of the patient.

4. Re Claim 6: Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin '808 in view of Murugesan et al (US 5,865,746). The teachings of Dumoulin have been discussed above.

However, Dumoulin fails to disclose or fairly suggest using Hadamard multiplexing algorithm to minimize artifacts Murugesan et al teaches use of Hadamard to control the noise margin ratio. (Col.3, line 29-40)

Therefore, in view of Murugesan et al, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Hadamard algorithm to reduce the artifacts in order to increase the reliability of the system in vivo imaging.

5. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins (US 6,175,757).

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Re Claim 10 and 11: Although Watkins fails to specifically suggest at least two medical devices adapted to be inserted and the rate of the scanning to be at least about 5 positions per second, Watkins teaches a medical tracking system (300) (Fig. 1) contains of at least one medical device (320) (Col. 3 line 1-29) with MR system having a tracking device (360) and the display (380) which display the location of the medical device and the system is designed for real time tracking (Col. 3, line 53-55).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a magnetic resonance system which receives the signals from all of the coils at a rate of 5 position or more per second in order to show the location and orientation of the medical device in real time.

6. Claims 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin (US 5,318,025).

Re Claim 12: Although Dumoulin '025 fails to specifically suggest a display depicting at least a first and second magnetic resonance image defining first and second scan plane, Dumoulin '025 teaches a tracking system with a medical device (150) to be inserted into patient (100) with a tracking coil (200a-n) and MR system (120) to track the signal received from the coils in device (150). Dumoulin's system also contains of at least first and second gradient pulse (Col. 5 line 4-16). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have two separated scan plane to superimposing the position of each coil in one of the scan planes on to a corresponding position on the corresponding magnetic

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resonance image in order to show the location and orientation of each coil(s) with respect to first and the second pulse emitted towards the coil(s).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hoshino disclose Interventional MR imaging with detection and display of device position; Lee discloses Connector and guidewire connectable thereto; Atalar discloses Apparatus, systems, and methods for in vivo magnetic resonance imaging; Levin discloses Method and apparatus for treatment of congestive heart failure by improving perfusion of the kidney; Gillies discloses MR-visible medical device for neurological interventions using nonlinear magnetic stereotaxis and a method imaging.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to I Kenneth Kholdebarin whose telephone number is 571-270-1347. The examiner can normally be reached on M-F 8 AM- 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IKK

Iman Kenneth Kholdebairn

February 28, 2007

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